

AMENDMENTS TO THE SPECIFICATION WITH MARKINGS TO SHOW CHANGES MADE

Amend the following paragraphs:

[0006] --It would therefore be desirable and advantageous to provide a method for determining the rotor position of a synchronous motor, which obviates prior art shortcomings and is specifically capable of accurately determining the rotor position in spite of existing disturbances and the flatness of the curve of the absolute value of the current vector ~~curve~~--.

[0015] --FIG. 2 is a vector diagram of the ~~rotor or~~ stator currents;--.

[0019] --Turning now to the drawing, and in particular to FIG. 1, there is shown a block diagram of a drive unit with a synchronous motor 2, which is controlled by a controller 1. The rotor position of the synchronous motor 2, which in the illustrated exemplary embodiment is defined as a rotor position angle ρ , is measured by a position measuring device 3. The position measuring device 3 can be implemented, for example, in the form of an incremental rotation ~~encoder~~ transducer enables computation of absolute position values only after moving past a reference point. The position measuring device 3 is connected with the shaft 4 of the synchronous motor 2. Since the shaft 4 is rigidly connected with the rotor of the synchronous motor 2, the rotor position angle ρ defines the position of the shaft 4. Optionally, a brake 5 can be applied to the shaft 4. Such

mechanical or electrical brakes 5 are commonly used to quickly brake a motion or to hold axes without applying an electrical current. The brake 5 can be activated by the controller 1. A useful load 6 can be driven by the shaft 4, for example, the tool spindle of a machine-tool or production machine, or a linear axle of a production machine driven by the spindle. The drive unit can also be used for driving a production machine or any other suitable type of machine.--.

[0023] --The rotor position angle p_0 of the stationery motor will now be determined by the method of the invention. With the brake 5 (see FIG. 1) applied, several current vectors I with different angular positions φ (see FIG. 2) are applied to the synchronous motor 2. A current deviation ~~having an absolute value~~ is applied to each of these current vectors I parallel to ~~the a~~ a ~~corresponding~~ current vector I ~~is applied to each of these current vectors I~~ in order so as to generate a small defined excursion $\Delta\beta$ of the rotor against the holding force of the brake. The resulting curve depicted in FIG. 3 shows two minima for the absolute values I of the current vectors I that are each offset ~~from~~ each other by 90° and located before and after the rotor position angle p_0 that is to be determined. The excursion $\Delta\beta$ of the rotor changes its direction from negative values to positive values ~~and~~ in the vicinity of the position of the rotor position angle p_0 to be determined.--.